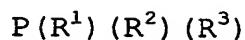


CLAIMS

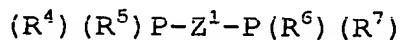
1. An organic polymer light-emitting element material having a gold complex structure as a part of the side chain
5 or crosslinking group.
2. The organic polymer light-emitting element material as claimed in claim 1, wherein the molecular weight of the organic polymer is from 1,000 to 1,000,000.
10
3. The organic polymer light-emitting element material as claimed in claim 1 or 2, which is obtained by polymerizing a composition containing a polymerizable gold complex where at least one ligand has a polymerizable functional group as the
15 substituent.
4. The organic polymer light-emitting element material as claimed in claim 1, wherein the gold complex structure has an organic phosphine compound as at least one ligand.
20
5. The organic polymer light-emitting element material as claimed in claim 3, wherein at least one ligand of the polymerizable gold complex is an organic phosphine compound.
- 25 6. The organic polymer light-emitting element material as claimed in claim 5, wherein at least one organic phosphine compound as the ligand has a polymerizable functional group as the substituent.
- 30 7. The organic polymer light-emitting element material as claimed in any one of claims 4 to 6, wherein the organic phosphine compound is represented by formula (1):



(1)

wherein R¹ to R³ each independently represents a hydrogen atom, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an alkoxy group having 1 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, a heteroaryl group having 3 to 15 carbon atoms which may have a substituent or an aryloxy group having 6 to 15 carbon atoms which may have a substituent.

8. The organic polymer light-emitting element material as claimed in any one of claims 4 to 6, wherein the organic phosphine compound is represented by formula (2):



(2)

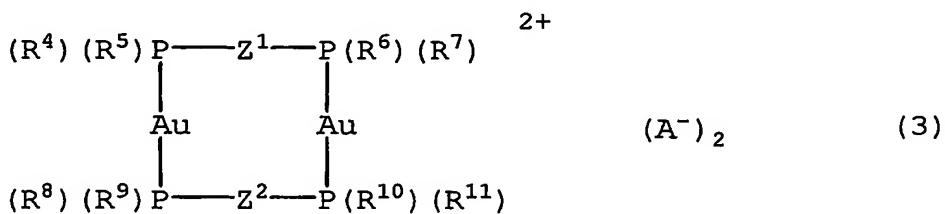
wherein R⁴ to R⁷ each independently represents a hydrogen atom, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an alkoxy group having 1 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, a heteroaryl group having 3 to 15 carbon atoms which may have a substituent or an aryloxy group having 6 to 15 carbon atoms which may have a substituent, and

Z¹ represents an organic group which crosslinks two phosphorus atoms, such as alkylene group having 1 to 20

carbon atoms which may have a substituent, alkylene group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, or arylene group having 6 to 20 carbon atoms which may have a substituent.

5

9. The organic polymer light-emitting element material as claimed in any one of claims 3 to 6, wherein the polymerizable gold complex has a structure represented by formula (3):



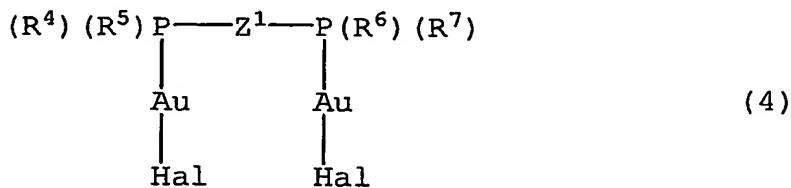
wherein R^4 to R^7 and Z^1 have the same meanings as in claim 8, R^8 to R^{11} each independently represents a hydrogen atom, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an alkoxy group having 1 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, a heteroaryl group having 3 to 15 carbon atoms which may have a substituent or an aryloxy group having 6 to 15 carbon atoms which may have a substituent,

Z^2 represents an organic group which crosslinks two phosphorus atoms, such as alkylene group having 1 to 20 carbon atoms which may have a substituent, alkylene group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, or arylene group having 6 to

20 carbon atoms which may have a substituent, and
 A^- represents a monovalent anion,
provided that at least one of R^4 to R^{11} , Z^1 and Z^2 has a polymerizable functional group.

5

10. The organic polymer light-emitting element material as claimed in any one of claims 3 to 6, wherein the polymerizable gold complex has a structure represented by formula (4):

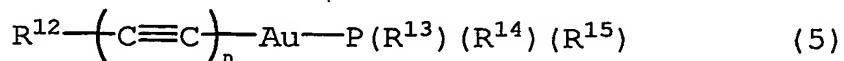


10

wherein R^4 to R^7 and Z^1 have the same meanings as in 8 , and Hal represents a halogen atom, provided that at least one of R^4 to R^7 and Z^1 has a polymerizable functional group.

15 11. The organic polymer light-emitting element material as claimed in any one of claims 1 to 4 , wherein the gold complex structure has at least one alkynyl ligand.

20 12. The organic polymer light-emitting element material as claimed in any one of claims 3 to 6, wherein the polymerizable gold complex has a structure represented by formula (5):



25 wherein R^{12} represents a hydrogen atom, a cyano group, a silyl group having 3 to 20 carbon atoms, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an

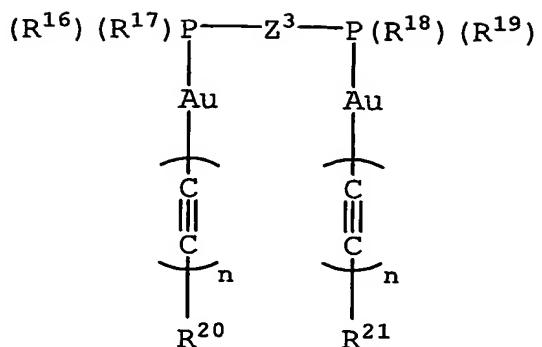
alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, a heteroaryl group having 3 to 15 carbon atoms which may have a substituent, an acyl group having 1 to 15 carbon atoms, a carboxyl group, or an alkoxy carbonyl group having 2 to 15 carbon atoms,

R¹³ to R¹⁵ each independently represents a hydrogen atom, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an alkoxy group having 1 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, a heteroaryl group having 3 to 15 carbon atoms which may have a substituent or an aryloxy group having 6 to 15 carbon atoms which may have a substituent, and

n represents an integer of 1 to 5,

provided that at least one of R¹² to R¹⁵ has a polymerizable functional group.

13. The organic polymer light-emitting element material as claimed in any one of claims 3 to 6, wherein the polymerizable gold complex has a structure represented by formula (6):



(6)

wherein R^{16} to R^{19} each independently represents a hydrogen atom, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an alkoxy group having 1 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, a heteroaryl group having 3 to 15 carbon atoms which may have a substituent or an aryloxy group having 6 to 15 carbon atoms which may have a substituent,

R^{20} to R^{21} each independently represents a hydrogen atom, a cyano group, a silyl group having 3 to 20 carbon atoms, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, a heteroaryl group having 3 to 15 carbon atoms which may have a substituent, an acyl group having 1 to 15 carbon atoms, a carboxyl group, or an alkoxy carbonyl group having 2 to 15 carbon atoms, R^{20} and R^{21} may be linked with each other via a crosslinking group,

5 Z^3 represents an organic group which crosslinks two phosphorus atoms, such as alkylene group having 1 to 20 carbon atoms which may have a substituent, alkylene group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, or arylene group having 6 to 20 carbon atoms which may have a substituent, and

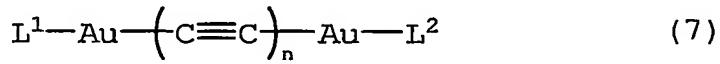
n represents an integer of 1 to 5,

provided that at least one of R^{16} to R^{21} and Z^3 has a polymerizable functional group.

10

14. The organic polymer light-emitting element material as claimed in any one of claims 3, 5 and 6, wherein the polymerizable gold complex has a structure represented by formula (7) :

15



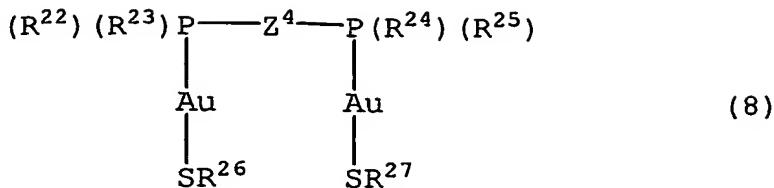
wherein L^1 and L^2 each represents a monodentate or bidentate ligand, at least one of L^1 and L^2 is the organic phosphine compound described in claim 7 or 8, and n represents an integer of 1 to 5.

20

15. The organic polymer light-emitting element material as claimed in any one of claims 3 to 6, wherein the polymerizable gold complex has at least one thiolato ligand.

25

16. The organic polymer light-emitting element material as claimed in any one of claims 3 to 6 , wherein the polymerizable gold complex has a structure represented by formula (8) :



wherein R^{22} to R^{25} each independently represents a hydrogen atom, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an alkoxy group having 1 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, a heteroaryl group having 3 to 15 carbon atoms which may have a substituent or an aryloxy group having 6 to 15 carbon atoms which may have a substituent,

R^{26} and R^{27} each independently represents a hydrogen atom, an alkyl group having 1 to 15 carbon atoms which may have a substituent, an alkyl group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, an alkenyl group having 2 to 15 carbon atoms which may have a substituent, an aryl group having 6 to 15 carbon atoms which may have a substituent, or a heteroaryl group having 3 to 15 carbon atoms which may have a substituent, and R^{26} and R^{27} may be linked with each other via a crosslinking group,

Z^4 represents an organic group which crosslinks two phosphorus atoms, such as alkylene group having 1 to 20 carbon atoms which may have a substituent, alkylene group having 3 to 15 carbon atoms which has a cyclic structure and which may have a substituent, or arylene group having 6 to 20 carbon atoms which may have a substituent,

provided that at least one of R²² to R²⁷ and Z⁴ has a polymerizable functional group.

17. The organic polymer light-emitting element material as
5 claimed in any one of claims 3 to 6, wherein the
polymerizable functional group has radical polymerizability.

18. The organic polymer light-emitting element material as
claimed in any one of claims 3 to 6, wherein the
10 polymerizable functional group is an organic group having a
carbon-carbon double bond.

19. An organic polymer light-emitting element comprising a
pair of electrodes having interposed therebetween at least
15 one layer comprising the organic polymer light-emitting
element material described in any one of claims 1 to 18.

20. An organic polymer light-emitting element comprising a
pair of electrodes having interposed therebetween at least
20 one layer each comprising one or more organic polymer light-
emitting element material described in any one of claims 1
to 18.